APPENDIX I

WATER SERVICE SYSTEM ANALYSIS

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APRIL 2006

East Sunnyvale ITR Project

Water System

This report provides a discussion of the existing water supply system relative to the East Sunnyvale ITR Project.

Project Location. The East Sunnyvale ITR project area is located in east Sunnyvale, generally bounded by Duane Avenue on the north, Stewart Avenue on the south, Wolfe Road / Fair Oaks Avenue on the west and Lawrence Expressway on the East. The Kings Academy High School, formerly Sunnyvale High School, and Fair Oaks Park are located on the west side of the project site. The nearest major thoroughfares are U.S. Highway 101, Bayshore Freeway, to the north, Central Expressway to the south, and Lawrence Expressway to the east.

Land Use. The project is currently zoned for industrial uses and is occupied by that type of use. The project plans to change the General Plan designation from Industrial to ITR, or Industrial-to Residential. The ITR designation allows for the continuation or expansion of existing industrial and commercial uses as well as the construction of new residential housing. Proposed residential conversion on this site includes R-3 medium density at 12 to 25 dwelling units per acre and R-4 high density residential development at 25 to 36 dwelling units per acre. Figure 1 shows the proposed Land Use Plan.

Existing System. The project site is served by the City of Sunnyvale municipal water system that provides domestic water and fire protection to the existing industrial uses. The existing distribution system consists of 10" pipes interconnected, or looped, within the existing street right-of ways of Duane Avenue, Stewart Drive, North Wolfe Road, De Guigne Drive and East Duane Avenue. These 10" pipes are supplied by and connected to the 16" line in Lawrence Expressway at Duane and East Duane Avenues, 10" lines in Santa Trinita Drive, De Guigne Drive and North Wolfe Road, 8" lines in Fair Oaks, Duane, San Juan, Santa Paula, San Rafael, San Simeon and Santa Ynez Avenues. Additionally, there are 6" connections to Duane Avenue at San Luisto, San Miguel, San Patricio and San Pedro Avenues, and there is a connection through a pressure reducing valve from the 30" line to the 10" pipe in Duane Avenue in the intersection of Duane and Britton Avenues at the northwest corner of the project site.

The City Department of Public Works has indicated that the existing system has a static pressure of 81 psi (pounds per square inch) near the intersection of Santa Trinita Avenue and Stewart Drive. Flow tests conducted at two hydrants in this vicinity produced flows of 1414 and 1443 gpm (gallons per minute) with a residual pressure of 78 psi.

Proposed Project. Proposed residential on this site ranges from a high density (R-4) of 25 to 36 dwelling units per acre to medium density (R-3) of 12 to 25 units per acre. It is anticipated that the site will be developed within the range of 1638 to 2842 units.

Assuming three (3) people per residential unit with a daily use of 75 gallons per day per person would result in a per capita use of 225 gallons/unit/day. For this analysis we used 3.3 people per dwelling unit or a rate of 250 gallons/unit/day for residential use.

The development of all 2842 residential units multiplied by 250 gallons/unit/day produces 710,500 gallons per day or 493 gpm. A peak flow factor of 2 produces a total demand of 986 gpm which is well within the existing systems operational range measured at 1400 gpm at a single point of delivery, and the development of the maximum number of 2842 units would not have an adverse impact on the existing water distribution system.

Retail use is based on 120 gallons/day/1000 sq.ft. for commercial/light industrial mixed-use development and 70 gallons/day/1000 sq.ft. for strictly retail use. We have assumed that the retail area will have a maximum floor area ratio (FAR) of 50%.

The retail area shown on Figure 1 occupies approximately 9.6 acres, or 417,600 sq. ft. Fifty percent of this area multiplied by 120 gallons per day divided by 1000 sq. ft. produces a demand of 25, 056 gallons per day or 17.4 gpm, again, well within the existing distribution system's capacity.

The existing water distribution system was also evaluated in respect to its ability to provide water for fire protection. A fire flow demand of 2500 gpm from 2 or more hydrants was assumed for the base requirement. Discussions with the City Fire Department indicated that the Fire Department requires a minimum residual pressure of 20 psi when the flows are being extracted from the system.

The flow test information provided by the Public Works department at the hydrants located near the intersection of Stewart Drive and Santa Trinita Avenue of 1414 and 1443 gpm (gallons per minute) with a residual pressure of 78 psi meet this requirement.

To further evaluate the fire flow capacity of the existing distribution system we modeled the system using WaterCAD software by Bentley Systems, Inc. The existing pipe sizes, lengths and junctions were entered as shown on Figure 2. We chose 7 points of supply to the distribution system at existing points of connection along the easterly, southerly and westerly sides of the project area. The existing static pressure of 81 psi was used, converted to an equivalent elevation for these supply points identified as point numbers R-1 through R-7.

A flow of 2500 gpm was assumed at all 10 junction points labeled J-1 through J-10 simultaneously. The results of the analysis, shown on Table 1, show that the existing distribution system has the capacity to meet the assumed demand.

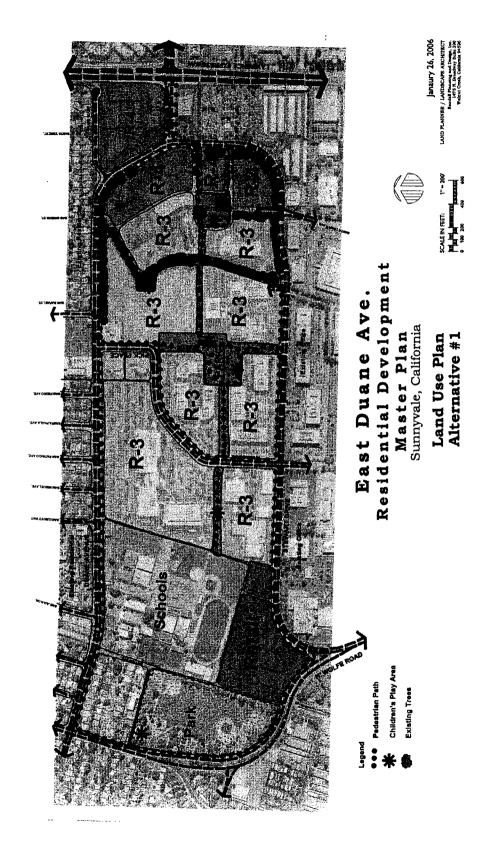


Figure 1: Proposed GPA Land Use Plan

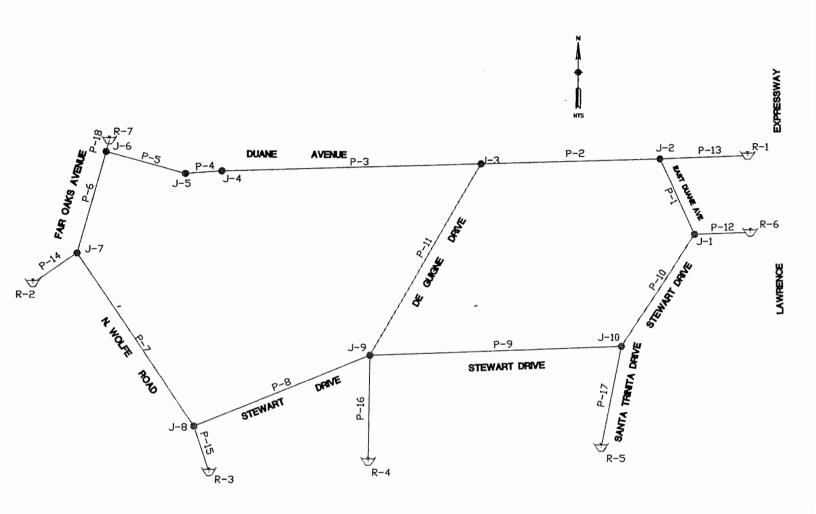


FIGURE 2:

Scenario: Base Fire Flow Analysis Fire Flow Report

Labe I	Zone	Fire Flow Iterations	Fire Flow Balanced?	Satisfies Fire Flow Constraints ?		Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)	Minimum System Junction
J-1	Zone	2	true	true	2,500.000	5,000.000	2,522.830	5,022.830	20.00	71.03	20.00	78.33	J-2	20.00	78.33	J-2
J-2	Zone	2	true	true	2,500.000	5,000.000	2,559.288	5,059.288	20.00	71.47	20.00	75.32	J-3	20.00	75.32	J-3
J-3	Zone	2	true	true	2,500.000	5,000.000	2,645.313	5,145.313	20.00	57.76	20.00	64.86	J-4	20.00	64.86	J-4
J-4	Zone	2	true	true	2,500.000	5,000.000	2,517.778	5,017.778	20.00	32.36	20.00	38.14	J-5	20.00	38.14	J-5
J-5	Zone	2	true	true	2,500.000	5,000.000	2,503.299	5,003.298	20.00	30.66	20.00	38.48	J-4	20.00	38.48	J-4
J-6	Zone	2	true	true	2,500.000	5,000.000	2,503.472	5,003.472	20.00	69.15	20.00	74.83	J-5	20.00	74.83	J-5
J-7	Zone	2	true	true	2,500.000	5,000.000	2,500.000	5,000.000	20.00	58.32	20.00	78.13	J-8	20.00	78.13	J-8
J-8	Zone	2	true	true	2,500.000	5,000.000	2,699.314	5,199.314	20.00	67.81	20.00	78.19	J-7	20.00	78.19	J-7
J-9	Zone	2	true	true	2,500.000	5,000.000	2,653.472	5,153.473	20.00	68.02	20.00	77.88	J-3	20.00	77.88	J-3
J-10	Zone	2	true	true	2,500.000	5,000.000	2,536.458	5,036.458	20.00	64.68	20.00	78.65	J-1	20.00	78.65	J-1

Scenario: Base Fire Flow Analysis Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm) I	Calculated Hydraulic Grade (ft)
R-1	187.00	Zone	109.058	187.00
R-2	187.00	Zone	-40.827	187.00
R-3	187.00	Zone	158.795	187.00
R-4	187.00	Zone	107.515	187.00
R-5	187.00	Zone	-66.898	187.00
R-6	187.00	Zone	-83.386	187.00
R-7	187.00	Zone	-74.744	187.00

Scenario: Base **Fire Flow Analysis Fire Flow Report**

Label			Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)		Residual Pressure (psi)		Minimum Zone Pressure (psi)	Minimum	Zone Junction
J-1	Zone	2	true	true	:,500.000	,000.000	:,522.830	5,022.830	20.00	71.03	20.00	78.33	J-2
J-2	Zone	2	true	true	.,500.000	1,000.000	:,559.288	5,059.288	20.00	71.47	20.00	75.32	J-3
J-3	Zone	2	true	true	:,500.000	000.000	:,645.313	5,145.313	20.00	57.76	20.00	64.86	J-4
J-4	Zone	2	true	true	:,500.000	000.000	!,517.778	5,017.778	20.00	32.36	20.00	38.14	J-5
J-5	Zone	2	true	true	.,500.000	,000.000	!,503.299	5,003.298	20.00	30.66	20.00	38.48	J-4
J-6	Zone	2	true	true	:,500.000	000.000	:,503.472	5,003.472	20.00	69.15	20.00	74.83	J-5
J-7	Zone	2	true	true	:,500.000	,000.000	:,500.000	5,000.000	20.00	58.32	20.00	78.13	J-8
J-8	Zone	2	true	true	.,500.000	000.000,	:,699.314	5,199.314	20.00	67.81	20.00	78.19	J-7
J-9	Zone	2	true	true	:,500.000	,000.000	1,653.472	5,153.473	20.00	68.02	20.00	77.88	J-3
J-10	Zone	2	true	true	,500.000	,000.000	:,536.458	5,036.458	20.00	64.68	20.00	78.65	J-1

Scenario: Base Fire Flow Analysis **Fire Flow Report**

1	/linimum Syster Pressure (psi)	Minimum	
	20.00	78.33	J-2
	20.00	75.32	J -3
-	20.00	64.86	J-4
	20.00	38.14	J-5
	20.00	38.48	J-4
	20.00	74.83	J-5
	20.00	78.13	J-8
	20.00	78.19	J-7
	20.00	77.88	J-3
	20.00	78.65	J-1

Scenario: Base **Fire Flow Analysis Junction Report**

Label	Elevation (ft)	Zone	Туре	Base Flow (gpm)	Pattern	Demand (Calculated (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1	0.00	Zone	Demand	22.830	Fixed	22.830	186.95	80.89
J-2	0.00	Zone	Demand	59.288	Fixed	59.288	186.93	80.88
J-3	0.00	Zone	Demand	145.312	Fixed	145.312	186.84	80.84
J-4	0.00	Zone	Demand	17.778	Fixed	17.778	186.86	80.85
J-5	0.00	Zone	Demand	3.299	Fixed	3.299	186.88	80.85
J-6	0.00	Zone	Demand	3.472	Fixed	3.472	186.98	80.90
J-7	0.00	Zone	Demand	0.000	Fixed	0.000	186.96	80.89
J-8	0.00	Zone	Demand	199.314	Fixed	199.314	186.86	80.85
J-9	0.00	Zone	Demand	153.472	Fixed	153.472	186.86	80.84
J-10	0.00	Zone	Demand	36.458	Fixed	36.458	186.94	80.88

Page 1 of 1

Scenario Base Active Topology Alternative Base-Active Topology Physical Alternative Base-Physical Demand Alternative Base-Demand Initial Settings Alternative Base-Initial Settings Operational Alternative Base-Operational Age Alternative Base-Age Alternative Constituent Alternative Base-Constituent Trace Alternative Base-Constituent Trace Alternative Base-Fire Flow Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Energy Cost User Data Alternative Base-User Data Global Adjustments Summary K 3,694.21 ft Elevation Y 9,385.50 ft Zone Demand Summary Type Base Flow (gpm) Demand 22.830 Fixed Calculated Results Summary Time Calculated Pressure Pressure Demand	
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User Data Alternative Base-User Data Global Adjustments Summary None> Roughness None> Roughness None Elevation Y -9,385.50 ft Jone Demand Summary Type Base Flow (gpm) Demand 22.830 Fixed Calculated Results Summary Time Calculated Pressure Calculated Perssure Demand Demand Demand Demand Calculated Pressure Demand Deman	
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Calculated Results Summary Time Calculated Pressure Pressure Demand	
Time Calculated Pressure Pressure Demand	
Time Calculated Pressure Pressure Demand	
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0.00 186.95 80.89 186.95 22.830	

Scenario Summary			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
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Demand Sur	mmary		
Type Base Flow (gpm)	w Pattern		
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(gpm)	.288 Fixed	<u>-</u>	
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Scenario Summary				
Scenario	Base			
Active Topology Alternative	Base-Ac	tive Topology		
Physical Alternative	Base-Ph	ysical		
Demand Alternative	Base-De	emand		
Initial Settings Alternative	Base-Ini	tial Settings		
Operational Alternative	Base-Op	erational		
Age Alternative	Base-Ag	e Alternative		
Constituent Alternative	Base-Co	nstituent		
Trace Alternative	Base-Tra	ace Alternative		
Fire Flow Alternative	Base-Fir	e Flow		
Capital Cost Alternative	Base-Ca	pital Cost		
Energy Cost Alternative	Base-En	ergy Cost		
User Data Alternative	Base-Us	er Data		
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			Roughness	<none></none>
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Global Adjustments Summar Geometric Summary X Y	<none> 1,8 -8,7</none>		Elevation	0.00 ft
Geometric Summary X	<none> 1,8 -8,7</none>		Elevation	0.00 ft
Geometric Summary X Y	<none> 1,8 -8,7 ummary ow Pat</none>		Elevation	0.00 ft
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Geometric Summary X Y Demand So Type Base Fl (gpm) Demand 14	<none> 1,8 -8,7 ummary ow Pat</none>	82.06 ft tern	Elevation	0.00 ft
Geometric Summary X Y Demand Si Type Base Fl (gpm) Demand 14 Calculated Re Time Calculated Pres	<none> 1,8 -8,7 ummary ow Pat) 5.312 Fixed</none>	82.06 ft tern	Elevation	0.00 ft
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Page 3

Scenario Summ	ary				
Scenario		Base			
Active Topology	Alternative	Base-Ac	tive Topology		
Physical Alterna	ative	Base-Ph	ysical		
Demand Alterna	ative	Base-De	emand		
Initial Settings A	lternative	Base-Ini	tial Settings		
Operational Alte	ernative	Base-Op	erational		
Age Alternative		Base-Ag	e Alternative		
Constituent Alte	rnative	Base-Co	nstituent		
Trace Alternativ	е	Base-Tra	ace Alternative		
Fire Flow Altern	ative	Base-Fir	e Flow		
Capital Cost Alt	ernative	Base-Ca	pital Cost		
Energy Cost Alt	ernative	Base-En	ergy Cost		
User Data Alter	native	Base-Us	er Data		
		<none></none>		Roughness	<none></none>
Geometric Sumi	mary		<u> </u>		
X	····	-3	37.60 ft	Elevation	0.00 ft
Y			37.94 ft	Zone	Zone
·			07.01 10	20110	
	Demand Sumn	nary			
Туре	Base Flow (gpm)	Pat	tern		
Demand	17.77	8 Fixed			
Ca	Iculated Result	s Summar	<u></u>	-	
Time Calcul (hr) Hydraulic (ft)	Grade (psi)	e Pressure Head (ft)	Demand (Calculated) (gpm)	-	
0.00	186.86 80.8	5 186.86	17.778	_	

Scenario Summary				
Scenario	Base			
Active Topology Alternative	Base-Active	Topology		
Physical Alternative	Base-Physic	al		
Demand Alternative	Base-Deman	ıd		
Initial Settings Alternative	Base-Initial S	Settings		
Operational Alternative	Base-Operat	ional		
Age Alternative	Base-Age Al			
Constituent Alternative	Base-Constit	uent		
Trace Alternative	Base-Trace A	Alternative		
Fire Flow Alternative	Base-Fire Flo	ow.		
Capital Cost Alternative	Base-Capital	Cost		
Energy Cost Alternative	Base-Energy	Cost		
User Data Alternative	Base-User D	ata		
Geometric Summary				
X	-646.2	8 ft	Elevation	0.00 ft
Υ	-8,860.1	4 ft	Zone	Zone
Demand Sum	mary			
Type Base Flow (gpm)	Pattern			
Demand 3.2	99 Fixed			
Calculated Resu	Its Summary	_	-	
	re Pressure D	Demand alculated) (gpm)	-	
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			-	

Scenario Summary			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Geometric Summary			
X	-1,323.78 ft	Elevation	0.00 ft
Υ	-8,672.72 ft	Zone	Zone
Demand Sum	many		
Demand Sum			
Demand Sum Type Base Flow (gpm)	mary Pattern		
Type Base Flow (gpm)			
Type Base Flow (gpm) Demand 3.4	Pattern 72 Fixed		
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Type Base Flow (gpm) Demand 3.4 Calculated Resu	Pattern 72 Fixed		

Scenario Summary			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
	<none></none>	Roughness	<none></none>
Geometric Summary	<none></none>	Roughness	<none></none>
	<none> -1,567.55 ft</none>	Roughness	<none></none>
Geometric Summary X Y			
X	-1,567.55 ft	Elevation	0.00 ft
x	-1,567.55 ft -9,532.89 ft	Elevation	0.00 ft
X Y	-1,567.55 ft -9,532.89 ft	Elevation	0.00 ft
X Y Demand Sum Type Base Flow (gpm)	-1,567.55 ft -9,532.89 ft mary	Elevation	0.00 ft
Demand Sum Type Base Flow (gpm) Demand 0.00	-1,567.55 ft -9,532.89 ft mary Pattern	Elevation	0.00 ft
X Y Demand Sum Type Base Flow (gpm)	-1,567.55 ft -9,532.89 ft mary Pattern	Elevation	0.00 ft
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Scenario Summary		·······		
Scenario	Base			
Active Topology Alterna	ative Base	Active Topology		
Physical Alternative		Physical		
Demand Alternative		-Demand		
Initial Settings Alternation	ve Base	Initial Settings		
Operational Alternative		-Operational		
Age Alternative	Base	Age Alternative		
Constituent Alternative		-Constituent		
Trace Alternative	Base	Trace Alternative		
Fire Flow Alternative	Base	Fire Flow		
Capital Cost Alternative	Base	Capital Cost		
Energy Cost Alternative	Base	Energy Cost		
User Data Alternative	Base	-User Data		
			Roughness	
Geometric Summary				
X		-571.54 ft	Elevation	0.00 ft
Υ	-1	0,998.87 ft	Zone	Zone
Demai	nd Summary			
	se Flow gpm)	Pattern		
Demand	199.314 Fixed			
			_	
Calculate	d Results Sumn	nary	_	
Time Calculated	Pressure Press			
(hr) Hydraulic Grade (ft)	(psi) Hea (ft)	d (Calculated) (gpm)		
	\1 /	(gpm)	_	

Scenario Summary			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative	e	
Fire Flow Alternative	Base-Fire Flow	*	
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			<u> </u>
Global Adjustments Summary	<none></none>	Roughness	<none></none>
Global Adjustments Summary	<none></none>	Roughness	<none></none>
	<none></none>	Roughness	<none></none>
Geometric Summary	<none></none>	Roughness Elevation	<none></none>
Global Adjustments Summary Geometric Summary X			
Geometric Summary	927.12 ft -10,403.95 ft	Elevation	0.00 ft
Geometric Summary X Y	927.12 ft -10,403.95 ft nmary	Elevation	0.00 ft
Geometric Summary X Y Demand Summary Type Base Flow (gpm)	927.12 ft -10,403.95 ft nmary	Elevation	0.00 ft

(Calculated)

(gpm) 153.472

Hydraulic Grade

(ft)

186.86

(psi)

80.84

Head

(ft)

186.86

(hr)

0.00

Scenario Summary			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
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Global Majorition & Gammary	<none></none>	Roughness	<none></none>
	<none></none>	Roughness	<none></none>
Global Adjustments Summary Geometric Summary X	<none> 3,069.34 ft</none>	Roughness	<none></none>
Geometric Summary			
Geometric Summary X Y	3,069.34 ft -10,333.26 ft	Elevation	0.00 ft
Geometric Summary X Y Demand Sum	3,069.34 ft -10,333.26 ft	Elevation	0.00 ft
Geometric Summary X Y	3,069.34 ft -10,333.26 ft	Elevation	0.00 ft
Geometric Summary X Y Demand Sum Type Base Flow (gpm)	3,069.34 ft -10,333.26 ft	Elevation	0.00 ft
Geometric Summary X Y Demand Sum Type Base Flow (gpm) Demand 36.4	3,069.34 ft -10,333.26 ft nmary Pattern 58 Fixed	Elevation	0.00 ft
Geometric Summary X Y Demand Sum Type Base Flow (gpm) Demand 36.4 Calculated Resu	3,069.34 ft -10,333.26 ft nmary Pattern 58 Fixed	Elevation	0.00 ft
Geometric Summary X Y Demand Sum Type Base Flow (gpm) Demand 36.4 Calculated Resu	3,069.34 ft -10,333.26 ft mary Pattern 58 Fixed Its Summary re Pressure Demand	Elevation	0.00 ft

Scenario Sumn	nary							
Scenario		В	ase					
Active Topolog	y Altemative	e B	ase-Active Topology					
Physical Altern	ative	В	ase-Physical					
Demand Altern	ative	В	ase-Demand					
Initial Settings	Alternative	В	ase-Initial Settings					
Operational Alt	ernative	В	ase-Operational					
Age Alternative)	В	ase-Age Alternative					
Constituent Alt	ernative	В	ase-Constituent					
Trace Alternation	ve	В	ase-Trace Alternative					
Fire Flow Altern	native	В	ase-Fire Flow					
Capital Cost Al	ternative	В	ase-Capital Cost					
Energy Cost Al	ternative	В	ase-Energy Cost					
User Data Alter	rnative	В	ase-User Data					
Global Adjustm	ents Summa	ary						
		<	None>	Roughness		<none></none>		
Pipe Characteri	stics							
Material			Cast iron	Hazen- Williams C			100.0	
Diameter			10.0 in	Minor Loss Coeffici	ent		0.00	
Check Valve?			false	Length		7	'25.00 ft	
From Node			J-1	To Node			J-2	
Elevations								
From Elevation			0.00 ft	To Elevation	. <u></u>		0.00 ft	
Initial Status								
Initial Status		0	pen				·	
			Calculated	Results Summary				
Time Control (hr) Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure t Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Gradien
					(***)	(/	(1.5)	

Scenario Summary			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			
	<none></none>	Roughness	<none></none>
Pipe Characteristics			
Material	Asbestos Cement	Hazen- Williams C	140.0
	10.0 in	Minor Loss Coefficient	0.00
	10.0 111	Million 2000 Occillolom	0.00
Check Valve?	false	Length	1,517.00 ft
Diameter Check Valve? From Node			
Check Valve? From Node	false	Length	1,517.00 ft
Check Valve? From Node Elevations	false	Length	1,517.00 ft
Check Valve? From Node Elevations From Elevation	false J-2	Length To Node	1,517.00 ft J-3
Check Valve?	false J-2	Length To Node	1,517.00 ft J-3
Check Valve? From Node Elevations From Elevation	false J-2 0.00 ft Open	Length To Node To Elevation	1,517.00 ft J-3
Check Valve? From Node Elevations From Elevation nitial Status	false J-2 0.00 ft Open	Length To Node	1,517.00 ft J-3
Check Valve? From Node Elevations From Elevation Initial Status Initial Status	false J-2 0.00 ft Open	Length To Node To Elevation Results Summary	1,517.00 ft J-3 0.00 ft ated Calculated Pressure Headlos on Minor Pipe Gradien

Scenario Summary							
Scenario	Ba	ase			÷ · ·		
Active Topology Alternative	Ba	ase-Active Topology					
Physical Alternative	Ва	ase-Physical					
Demand Alternative	Ba	se-Demand					
Initial Settings Alternative	Ba	se-Initial Settings					
Operational Alternative	Ba	se-Operational					
Age Alternative	Ba	se-Age Alternative					
Constituent Alternative	Ba	se-Constituent					
Trace Alternative	Ba	se-Trace Alternative					
Fire Flow Alternative	Ba	se-Fire Flow					
Capital Cost Alternative	Ba	ise-Capital Cost					
Energy Cost Alternative	Ba	se-Energy Cost					
User Data Alternative	Ba	ise-User Data			· · · · · · · · · · · · · · · · · · ·		
Global Adjustments Summar	ry		 		· · · · · · · · · · · · · · · · · · ·		
	</td <td>lone></td> <td>Roughness</td> <td></td> <td><none></none></td> <td></td> <td></td>	lone>	Roughness		<none></none>		
Pipe Characteristics							
Material	Asbes	tos Cement	Hazen- Williams C			140.0	
Diameter		10.0 in	Minor Loss Coeffici	ent		0.00	
Check Valve?		false	Length		2,2	13.00 ft	
From Node		J-3	To Node			J-4	
Elevations							
From Elevation		0.00 ft	To Elevation		· · · · · · · · · · · · · · · · · · ·	0.00 ft	
Initial Status	<u> </u>						
Initial Status Initial Status	Op	pen					
	Op	pen					
	Op		Results Summary				
Initial Status		Calculated	Results Summary Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pipe	Gradien

Scenario Summary			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summa	ıry		
	<none></none>	Roughness	<none></none>
Pipe Characteristics			
Material	Cast iron	Hazen- Williams C	100.0
Diameter	10.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	309.00 ft
Check Valve? From Node	false J-4	Length To Node	309.00 ft J-5
		· ·	
From Node		· ·	
From Node Elevations	J-4	To Node	J-5
From Node Elevations From Elevation	J-4	To Node	J-5
From Node Elevations From Elevation Initial Status	J-4 0.00 ft Open	To Node To Elevation	J-5
From Node Elevations From Elevation Initial Status	J-4 0.00 ft Open	To Node	J-5
From Node Elevations From Elevation Initial Status	J-4 0.00 ft Open	To Node To Elevation Results Summary Downstream Structure Calc Hydraulic Grade Fri (ft) Hea	J-5

Scenario Summary							
Scenario	Base						
Active Topology Alterna	ative Base	-Active Topology					
Physical Alternative	Base	-Physical					
Demand Alternative	Base	-Demand					
Initial Settings Alternati	ve Base	-Initial Settings					
Operational Alternative	Base	-Operational					
Age Alternative	Base	-Age Alternative					
Constituent Alternative	Base	-Constituent					
Trace Alternative	Base	-Trace Alternative	•				
Fire Flow Alternative	Base	-Fire Flow					
Capital Cost Alternative	e Base	-Capital Cost					
Energy Cost Alternative	e Base	-Energy Cost					
User Data Alternative	Base	-User Data					
Global Adjustments Sur	nmary						
	<non< td=""><td>e></td><td>Roughness</td><td></td><td><none></none></td><td></td><td></td></non<>	e>	Roughness		<none></none>		
Pipe Characteristics							
Material	Du	ctile Iron	Hazen- Williams C		*****	100.0	
Diameter		8.0 in	Minor Loss Coeffici	ent		0.00	
Check Valve?		false	Length		7	03.00 ft	
OHOOK Valve:			•				
From Node		J-5	To Node			J-6	
From Node		J-5	To Node			J-6	
From Node		J-5	To Node To Elevation			J-6 0.00 ft	
From Node Elevations							
From Node Elevations From Elevation	Open	0.00 ft					
Elevations From Elevation Initial Status	Open	0.00 ft	To Elevation				
Elevations From Elevation Initial Status Initial Status		0.00 ft					
Elevations From Elevation Initial Status	rge Velocity Up	0.00 ft Calculated	To Elevation	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	0.00 ft Pressure Pipe	Gradien

	ary							
Scenario		В	ase					
Active Topology	Alternative	В	ase-Active Topology					
Physical Alterna	tive	В	ase-Physical					
Demand Alterna	ıtive	В	ase-Demand					
Initial Settings A	Iternative	В	ase-Initial Settings					
Operational Alte	rnative	B	ase-Operational					
Age Alternative		В	ase-Age Alternative					
Constituent Alte	rnative	B	ase-Constituent					
Trace Alternative	е	В	ase-Trace Alternative					
Fire Flow Alterna	ative	В	ase-Fire Flow					
Capital Cost Alte	ernative	B	ase-Capital Cost					
Energy Cost Alto	ernative	Ba	ase-Energy Cost					
User Data Alterr	native	B	ase-User Data					
Global Adjustme	nts Summa	ry						
		<f< td=""><td>lone></td><td>Roughness</td><td></td><td><none></none></td><td></td><td></td></f<>	lone>	Roughness		<none></none>		
Pipe Characteris	tics							
Material			Cast iron	Hazen- Williams C			100.0	
Diameter			8.0 in	Minor Loss Coefficie	ent		0.00	
Check Valve?			false	Length		8	94.00 ft	
			J-6	To Node			J-7	
From Node								
From Node Elevations								
Elevations			0.00 ft	To Elevation			0.00 ft	
Elevations From Elevation			0.00 ft	To Elevation			0.00 ft	
Elevations		0	0.00 ft	To Elevation			0.00 ft	
Elevations From Elevation Initial Status		0		To Elevation			0.00 ft	
Elevations From Elevation Initial Status		0	pen	To Elevation Results Summary			0.00 ft	
Elevations From Elevation Initial Status Initial Status	Discharge (gpm)		pen Calculated		Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	0.00 ft Pressure Pipe Headloss (ft)	Gradien

Scenario Active Topolo Physical Alter Demand Alter Initial Settings Operational A Age Alternativ Constituent A Trace Alternativ	native native Alternative	• B	ase ase-Active Topology					
Physical Alter Demand Alter Initial Settings Operational A Age Alternativ Constituent A Trace Alternativ	native native Alternative		ase-Active Topology					
Demand Alter Initial Settings Operational A Age Alternativ Constituent A Trace Alternati	native Alternative	В						
Initial Settings Operational A Age Alternativ Constituent A Trace Alternati	Alternative		ase-Physical	•				
Operational A Age Alternativ Constituent A Trace Alternati		В	ase-Demand					
Age Alternativ Constituent A Trace Alternat		В	ase-Initial Settings					
Constituent A Trace Alternat	lternative	В	ase-Operational					
Trace Alternat	re	В	ase-Age Alternative					
	Iternative	В	ase-Constituent					
Fire Flour Alte	tive	В	ase-Trace Alternative	:				
FRE Flow Alle	rnative	В	ase-Fire Flow					
Capital Cost A	Alternative	В	ase-Capital Cost					
Energy Cost A	Alternative	В	ase-Energy Cost					
User Data Alte	emative	В	ase-User Data					
Global Adjustr	nents Summa	ary						
		<	None>	Roughness		<none></none>		
Pipe Characte	ristics			===				
Material			Cast iron	Hazen- Williams C			100.0	
Diameter			10.0 in	Minor Loss Coeffici	ient		0.00	
Check Valve?			false	Length		2,0	62.00 ft	
From Node		·	J-7	To Node			J-8	
Elevations								
From Elevatio	n		0.00 ft	To Elevation			0.00 ft	
Initial Status								
Initial Status	· · · · · · · · · · · · · · · · · ·	0	pen					
			Calculated	Results Summary				
Time Control (hr) Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure I Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pressure Pipe Headloss (ft)	Gradien
0.00 Open	56.148	0.23	186.96	186.86	0.10	0.00	0.10	0.0

Scenario Sumn	nary							
Scenario		В	ase					
Active Topolog	y Alternative	е В	ase-Active Topology					
Physical Altern	ative	В	ase-Physical					
Demand Altern	ative	В	ase-Demand					
Initial Settings	Alternative	В	ase-Initial Settings					
Operational Alt	ernative	В	ase-Operational					
Age Alternative	•	В	ase-Age Alternative					
Constituent Alt	ernative	В	ase-Constituent					
Trace Alternation	ve	В	ase-Trace Alternative	•				
Fire Flow Altern	native	В	ase-Fire Flow					
Capital Cost Al	ternative	В	ase-Capital Cost					
Energy Cost Al	ternative	В	ase-Energy Cost					
User Data Alte	rnative	В	ase-User Data					
Global Adjustm	ents Summa	ary				.		
		<	None>	Roughness		<none></none>		
Pipe Characteri	stics							
Material			Cast iron	Hazen- Williams C			100.0	
Diameter			10.0 in	Minor Loss Coeffici	ent		0.00	
Check Valve?			false	Length		1,9	51.00 ft	
From Node			J-8	To Node			J-9	
Elevations			·					
From Elevation			0.00 ft	To Elevation			0.00 ft	
Initial Status					······································	-	<u> </u>	
Initial Status		0	pen					
						···		
			Calculated	Results Summary				
Time Control (hr) Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pipe	Gradien

	ту							
Scenario		В	ase					
Active Topology	Alternative	В	ase-Active Topology					
Physical Alternat	tive	В	ase-Physical					
Demand Alternat	tive	В	ase-Demand					
Initial Settings Al	ternative	В	ase-Initial Settings					
Operational Alter	rnative	В	ase-Operational					
Age Alternative		В	ase-Age Alternative					
Constituent Alter	native	В	ase-Constituent					
Trace Alternative)	В	ase-Trace Alternative					
Fire Flow Alterna	itive	В	ase-Fire Flow					
Capital Cost Alte	rnative	В	ase-Capital Cost					
Energy Cost Alte	rnative	В	ase-Energy Cost					
User Data Altern	ative	B	ase-User Data			·		
Global Adjustmer	nts Summa	ry					<u> </u>	
		<1	Vone>	Roughness		<none></none>	•	
Pipe Characterist	tics							
Material			Cast iron	Hazen- Williams C			100.0	
Diameter			10.0 in	Minor Loss Coefficie	∍nt		0.00	
Diameter Check Valve?			10.0 in false	Minor Loss Coefficient Length	ent	2,1	0.00 49.00 ft	
					ent 	2,1		
Check Valve?			false	Length	ent 	2,1	49.00 ft	
Check Valve? From Node Elevations			false	Length	ent	2,1	49.00 ft	
Check Valve? From Node Elevations From Elevation			false J-9	Length To Node	ent	2,1	49.00 ft J-10	
Check Valve? From Node		0	false J-9	Length To Node	ent	2,1	49.00 ft J-10	
Check Valve? From Node Elevations From Elevation Initial Status		0	false J-9 0.00 ft	Length To Node	ent	2,1	49.00 ft J-10	
Check Valve? From Node Elevations From Elevation Initial Status		0	false J-9 0.00 ft	Length To Node	ent	2,1	49.00 ft J-10	
Check Valve? From Node Elevations From Elevation Initial Status Initial Status	Discharge (gpm)	O Velocity (ft/s)	false J-9 0.00 ft pen Calculated	Length To Node To Elevation		Calculated Minor Headloss (ft)	49.00 ft J-10	Gradien

Scenario	Base		· · · · · · · · · · · · · · · · · · ·
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			
	<none></none>	Roughness	<none></none>
Pipe Characteristics	· · · · · · · · · · · · · · · · · · ·		
Material	Cast iron	Hazen- Williams C	100.0
Diameter	10.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	1,367.00 ft
From Node	J-10	To Node	J-1
Elevations			
From Elevation	0.00 ft	To Elevation	0.00 ft
Initial Status			
	Open	· · · · · · · · · · · · · · · · · · ·	
Initial Status Initial Status	Open		
		Results Summary	
Initial Status Time Control Discharge Ve	Calculated I	Results Summary ownstream Structure Calculated Hydraulic Grade Friction (ft) Headloss (ft)	Calculated Pressure Headlos Minor Pipe Gradien Headloss Headloss (ft/1000f (ft) (ft)

Scenario Summ	nary							
Scenario		В	ase					
Active Topology	y Alternative	В	ase-Active Topology					
Physical Alterna	ative	В	ase-Physical					
Demand Altern	ative	В	ase-Demand					
Initial Settings A	Alternative	В	ase-Initial Settings					
Operational Alte	ernative	В	ase-Operational					
Age Alternative	;	В	ase-Age Alternative					
Constituent Alte	ernative	В	ase-Constituent					
Trace Alternativ	/e	В	ase-Trace Alternative	:				
Fire Flow Altern	native	В	ase-Fire Flow					
Capital Cost Alf	lernative	В	ase-Capital Cost					
Energy Cost All	ternative	В	ase-Energy Cost					
User Data Alter	native	B	ase-User Data					
Global Adjustme	ents Summa	ary						
		<	None>	Roughness		<none></none>	· · · · · · · · · · · · · · · · · · ·	
Pipe Characteri	stics							
Material			Cast iron	Hazen- Williams C			100.0	
Diameter			10.0 in	Minor Loss Coeffici	ent		0.00	
Check Valve?			false	Length		2,2	99.00 ft	
From Node			J-3	To Node	<u> </u>		J-9	
Elevations						 		
From Elevation			0.00 ft	To Elevation			0.00 ft	
Initial Status								
Initial Status		0	pen					
			Calculated	Results Summary	. 			
Time Control (hr) Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pipe	Gradien

(ft) (ft) Headloss Headloss (ft/10 (ft) (ft) (ft)	Scenario Summary							
Physical Alternative	Scenario	Ba	se					
Demand Alternative	Active Topology Alternative	e Bas	se-Active Topology					
Ditable Settings Alternative	Physical Alternative	Bas	se-Physical					
Operational Alternative Base-Operational Age Alternative Base-Age Alternative Constituent Alternative Base-Constituent Trace Alternative Base-Trace Alternative Fire Flow Alternative Base-Fire Flow Capital Cost Alternative Base-Energy Cost User Data Alternative Base-Energy Cost User Data Alternative Base-User Data Global Adjustments Summary None> Pipe Characteristics Roughness Material Cast iron Hazen-Williams C Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 480.00 ft From Node R-6 To Node J-1 Elevations From Elevation Initial Status Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated (ft) Hydraulic Grade (ft) Hydraulic Grade (ft) Hydraulic Grade (ft) Headloss (ft) Headlos (ft) H	Demand Alternative	Bas	se-Demand					
Age Alternative Base-Age Alternative Constituent Alternative Base-Constituent Trace Alternative Base-Trace Alternative Fire Flow Alternative Base-Fire Flow Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-User Data Global Adjustments Summary Sase-User Data Fipe Characteristics Roughness <none> Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 480.00 ft From Node R-6 To Node J-1 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Calculated Results Summary Time Control (ft) Discharge (gpm) Velocity (ft/s) Upstream Structure Downstream Structure Calculated (ft) Calculated Pressure Hear Hearlings (ft/s) (ft) Hearlings (ft/s) Hearlings (ft/s) Hearlings (ft/s)</none>	Initial Settings Alternative	Bas	se-Initial Settings					
Constituent Alternative	Operational Alternative	Bas	se-Operational					
Trace Alternative Base-Trace Alternative Base-Trace Alternative Base-Fire Flow Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-User Data Global Adjustments Summary Global Adjustments Summary Fipe Characteristics Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 480.00 ft From Node R-6 To Node J-1 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Open Calculated Results Summary Time Control Discharge (ft)'s) Velocity Upstream Structure Downstream Structure Calculated (ft) Calculated Pressure Head (ft) (ft) Headloss Headloss Headloss (ft/11 (ft))	Age Alternative	Bas	se-Age Alternative					
Fire Flow Alternative	Constituent Alternative	Bas	se-Constituent					
Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Energy Cost User Data Alternative Base-User Data Global Adjustments Summary ✓ None> Roughness ✓ None> Pipe Characteristics Material Cast iron Hazen-Williams C Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 480.00 ft From Node R-6 To Node J-1 Elevations From Elevation 187.00 ft To Elevation Open Calculated Results Summary Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Minor Pipe Grant Hydraulic Grade Hydraulic Grade Friction Headloss Headloss (H710 Headloss Headloss (H710 Headloss) (H710 Headloss (H710 Headloss) (H71	Trace Alternative	Bas	se-Trace Alternative	е				
Base-Energy Cost Base-User Data	Fire Flow Alternative	Bas	se-Fire Flow					
See Data Alternative Base-User Data	Capital Cost Alternative	Bas	se-Capital Cost					
Solution Status Cast use	Energy Cost Alternative	Bas	se-Energy Cost					
Solution Status Calculated Results Summary	User Data Alternative	Bas	se-User Data					
Section Roughness Section Roughness Section Sectin Section Section Section Section Section Section S	Global Adjustments Summa	arv				·		
Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 480.00 ft From Node R-6 To Node J-1 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Head (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gran (ft) (ft) (ft) Headloss (ft/10 (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)			one>	Roughness		<none></none>		
Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 480.00 ft From Node R-6 To Node J-1 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Head (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gran (ft) (ft) (ft) (ft) (ft) (ft) (ft)	Pina Characteristics							
Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 480.00 ft From Node R-6 To Node J-1 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated (ft) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Grade (ft) (ft) (ft) Headloss (ft/10 (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)								
Check Valve? false Length 480.00 ft From Node R-6 To Node J-1 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Open Calculated Results Summary Time Control Discharge (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Grade (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)								
From Node R-6 To Node J-1 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Head (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Grave (ft) (ft) (ft) Headloss Headloss (ft/10 (ft) (ft) (ft) (ft)					ent			
Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Head (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Grade (ft) (ft) (ft) Headloss Headloss (ft/10 (ft) (ft) (ft) (ft)				•		4		
From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Head (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Grave (ft) (ft) (ft) Headloss Headloss (ft/10 (ft) (ft) (ft) (ft) (ft)	From Node		K-6	10 Node			J-1	
Initial Status Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Head (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Grade (ft) (ft) (ft) Headloss Headloss (ft/10) (ft) (ft) (ft) (ft)	Elevations							
Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Head (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Grade (ft) (ft) (ft) Headloss Headloss (ft/10 (ft) (ft) (ft) (ft) (ft)	From Elevation		187.00 ft	To Elevation			0.00 ft	
Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Hear (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Grad (ft) (ft) Headloss Headloss Headloss (ft/10) (ft) (ft) (ft)	Initial Status	· · ·						
Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Hear (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gram (ft) (ft) Headloss Headloss Headloss (ft/10 (ft) (ft) (ft)	Initial Status	Оре	en					
Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Hear (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gram (ft) (ft) Headloss Headloss (ft/10 (ft) (ft) (ft)								
(hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gra (ft) (ft) Headloss Headloss (ft/10 (ft) (ft) (ft)			Calculated	d Results Summary				
0.00 0	3		Hydraulic Grade	Hydraulic Grade	Friction Headloss	Minor Headloss	Pipe Headloss	Gradient
0.00 Open 83.386 0.34 187.00 186.95 0.05 0.00 0.05	0.00 Open 83.386	0.34	187.00	186.95	0.05	0.00	0.05	0.10

Scenario Summary							
Scenario	Е	Base					
Active Topology Alte	rnative E	Base-Active Topology					
Physical Alternative	В	Base-Physical					
Demand Alternative	E	Base-Demand					
Initial Settings Altern	ative E	Base-Initial Settings					
Operational Alternati	ve E	Base-Operational					
Age Alternative	В	Base-Age Alternative					
Constituent Alternati	ve B	Base-Constituent					
Trace Alternative	B	Base-Trace Alternative	•				
Fire Flow Alternative	B	Base-Fire Flow					
Capital Cost Alternat	ive B	lase-Capital Cost					
Energy Cost Alternat	ive B	Base-Energy Cost					
User Data Alternative	В	Base-User Data		·			
Global Adjustments S	Summary			 			
		None>	Roughness		<none></none>		
Pipe Characteristics							
Material	Asbe	stos Cement	Hazen- Williams C			140.0	
Diameter		10.0 in	Minor Loss Coeffici	ient		0.00	
Check Valve?		false	Length		7	58.00 ft	
From Node		R-1	To Node			J-2	
Elevations							
From Elevation		187.00 ft	To Elevation			0.00 ft	
nitial Status			<u> </u>			<u> </u>	
Initial Status	Ċ)pen		<u> </u>	<u>-</u>		
		Calculated	d Results Summary				
			Downstream Structure	Calculated	Calculated		
Time Control Disc (hr) Status (gr	narge Velocity om) (ft/s)	Hydraulic Grade (ft)	Hydraulic Grade (ft)	Friction Headloss (ft)	Minor Headloss (ft)	Pipe Headloss (ft)	Gradien (ft/1000f

Scenario Summary			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data	·····	
Global Adjustments Summary			
	<none></none>	Roughness	<none></none>
Pipe Characteristics			
Material	Cast iron	Hazen- Williams C	100.0
	Cast iron 8.0 in	Hazen- Williams C Minor Loss Coefficient	100.0
Diameter			
Material Diameter Check Valve? From Node	8.0 in	Minor Loss Coefficient	0.00
Diameter Check Valve?	8.0 in false	Minor Loss Coefficient Length	0.00 452.00 ft
Diameter Check Valve? From Node Elevations	8.0 in false	Minor Loss Coefficient Length	0.00 452.00 ft
Diameter Check Valve? From Node Elevations From Elevation	8.0 in false R-2	Minor Loss Coefficient Length To Node	0.00 452.00 ft J-7
Diameter Check Valve? From Node	8.0 in false R-2	Minor Loss Coefficient Length To Node	0.00 452.00 ft J-7
Diameter Check Valve? From Node Elevations From Elevation	8.0 in false R-2 187.00 ft	Minor Loss Coefficient Length To Node	0.00 452.00 ft J-7
Diameter Check Valve? From Node Elevations From Elevation	8.0 in false R-2 187.00 ft Open	Minor Loss Coefficient Length To Node	0.00 452.00 ft J-7
Diameter Check Valve? From Node Elevations From Elevation Initial Status Initial Status	8.0 in false R-2 187.00 ft Open	Minor Loss Coefficient Length To Node To Elevation Results Summary	0.00 452.00 ft J-7 0.00 ft 0.00 ft Ated Calculated Pressure Headloss on Minor Pipe Gradien loss Headloss (ft/1000ft)

(hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss Headloss (ft/100 (ft) (ft) (ft)	Active Topology Alternative	Scenario Summary			
Physical Alternative	Physical Alternative	Scenario	Base		
Demand Alternative Base-Demand Base-Demand Base-Demand Base-Initial Settings Base-Operational Alternative Base-Operational Base-O	Demand Alternative	Active Topology Alternative	Base-Active Topology		
Ditable	Distribution Dist	Physical Alternative	Base-Physical		
Operational Alternative Base-Operational Age Alternative Base-Age Alternative Constituent Alternative Base-Constituent Trace Alternative Base-Trace Alternative Fire Flow Alternative Base-Fire Flow Capital Cost Alternative Base-Energy Cost User Data Alternative Base-User Data Global Adjustments Summary None> Pipe Characteristics Roughness Material Cast iron Hazen-Williams C Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation Initial Status Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Pressure Head (ft) Calculated Priction Minor Priction Minor Priction Minor Priction Headloss (ft)	Operational Alternative Base-Operational Results asse-Age Alternative Constituent Alternative Base-Constituent Trace Alternative Base-Trace Alternative Fire Flow Alternative Base-Fire Flow Capital Cost Alternative Base-Energy Cost Energy Cost Alternative Base-Energy Cost User Data Alternative Base-User Data Global Adjustments Summary None> Pipe Characteristics Roughness Material Cast iron Hazen-Williams C Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Minor Pipe Gradie (ft) Calculated Results Grade Hydraulic Grade Hydraulic Grade Headloss (ft) Calculated Pressure Headlos (ft) Headloss (ft)	Demand Alternative	Base-Demand		
Age Alternative Base-Age Alternative Constituent Alternative Base-Constituent Fire Flow Alternative Base-Fire Flow Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Energy Cost User Data Alternative Base-User Data Constituent Alternative	Age Alternative Base-Age Alternative Base-Constituent Constituent Alternative Base-Trace Alternative Base-Trace Alternative Fire Flow Alternative Base-Fire Flow Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Lenergy Cost User Data Alternative Base-User Data Global Adjustments Summary Fipe Characteristics Anne> Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Open Calculated Results Summary Time Control Discharge (nt) Status (gpm) Velocity Hydraulic Grade Hydraulic Grade Hydraulic Grade (ft) Headloss (Headloss (Head	Initial Settings Alternative	Base-Initial Settings		
Constituent Alternative	Constituent Alternative	Operational Alternative	Base-Operational		
Trace Alternative Base-Trace Alternative Fire Flow Alternative Base-Capital Cost Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-User Data Global Adjustments Summary None> Roughness <none> Pipe Characteristics Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 0.00 ft Calculated Results Summary Time Control Discharge (hr) Status (gpm) Velocity Upstream Structure Downstream Structure Calculated Friction (ft) (ft) Calculated Friction Headloss (ft) Calculated Pipe Headloss (ft)</none>	Trace Alternative Base-Trace Alternative Base-Fire Flow Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Lapraty Cost User Data Alternative Base-User Data Global Adjustments Summary < None> Pipe Characteristics Roughness < None> Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Calculated Results Summary Time Control Discharge Velocity (gpm) (ff/s) Upstream Structure Downstream Structure Calculated Calculated Pressure Headlos (ff) Pipe Gradie	Age Alternative	Base-Age Alternative		
Fire Flow Alternative Base-Fire Flow Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Energy Cost User Data Alternative Base-User Data Cobact Cobact	Fire Flow Alternative Base-Fire Flow Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Energy Cost User Data Alternative Base-Energy Cost User Data Alternative Base-User Data Global Adjustments Summary None Roughness None	Constituent Alternative	Base-Constituent		
Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Energy Cost User Data Alternative Base-User Data Global Adjustments Summary None> Roughness <none> Pipe Characteristics Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation Open Calculated Results Summary Calculated Results Summary Time Control Discharge (ft) Velocity Upstream Structure Downstream Structure Calculated (Alculated Pressure Headles) (ft) Pressure Headles) (ft) (ft) (ft) Headloss (ft) 100 (ft)</none>	Capital Cost Alternative Base-Capital Cost Energy Cost Alternative Base-Energy Cost User Data Alternative Base-User Data Global Adjustments Summary <none> Roughness <none> Pipe Characteristics Alazen-Williams C Material Cast iron Hazen-Williams C Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation Open Calculated Results Summary Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Friction Minor Pipe Gradie (ft) Hydraulic Grade Friction Headloss Headloss Headloss (ft) 1000 (ft) Headloss Headloss (ft) 1000 (ft)</none></none>	Trace Alternative	Base-Trace Alternative		
Base-Energy Cost Base-User Data	Base-Energy Cost Base-User Data	Fire Flow Alternative	Base-Fire Flow		
User Data Alternative	Sase-User Data Sase-User Data	Capital Cost Alternative	Base-Capital Cost		
Solution Status Calculated Results Summary Status Cardinary Card	Global Adjustments Summary Solution Roughness Solution So	Energy Cost Alternative	Base-Energy Cost		
Pipe Characteristics	None Roughness None	User Data Alternative	Base-User Data		
Pipe Characteristics Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Open Calculated Results Summary Time Control Discharge (fl/s) Hydraulic Grade (ft) (ft) Headloss (ft/100 ft) (ft) Headloss (ft/100 ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	Pipe Characteristics Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Open Calculated Results Summary Time Control Discharge (ft/s) Upstream Structure Downstream Structure Calculated (ft) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss (ft/1000 ft) (ft) (ft) (ft) Headloss Headloss (ft/1000 ft) Material Cast iron Hazen-Williams C 100.0 100.	Global Adjustments Summar	ry		
Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss Headloss (ft/100 (ft))	Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated (ft) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss Headloss (ft/1000 ft) (ft) (ft) (ft) (ft) (ft) (ft)		<none></none>	Roughness	<none></none>
Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (ft) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss Headloss (ft/100 (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	Material Cast iron Hazen-Williams C 100.0 Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated (ft) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss Headloss (ft/1000 ft) (ft) (ft) (ft) (ft) (ft) (ft)	<u></u>			
Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	Diameter 10.0 in Minor Loss Coefficient 0.00 Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headlo (ft) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss Headloss (ft/1000 ft/s) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	Pipe Characteristics			
Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	Check Valve? false Length 409.00 ft From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headlos (ft) (ft) (ft) Headloss Headloss (ft/1000 (ft)) (ft) (ft) (ft) (ft) (ft) (ft) (ft	Material	Cast iron	Hazen- Williams C	100.0
From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss (ft/100 (ft) (ft) (ft) (ft)	From Node R-3 To Node J-8 Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headlo (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) (ft) Headloss Headloss (ft/1000 (ft) (ft) (ft) (ft)	Diameter	10.0 in	Minor Loss Coefficient	0.00
Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss (ft/100 (ft) (ft) (ft) (ft)	Elevations From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headlo (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss Headloss (ft/1000 (ft) (ft) (ft) (ft) (ft)	Check Valve?	false	Length	409.00 ft
From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Calculated Results Summary Time Control Discharge (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	From Elevation 187.00 ft To Elevation 0.00 ft Initial Status Initial Status Calculated Results Summary Time Control Discharge (ft/s) Upstream Structure Downstream Structure Calculated Calculated Pressure Headlo (ft) (ft) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) (ft) Headloss Headloss (ft/1000 (ft/s) (ft) (ft) (ft) (ft) (ft) (ft)	From Node	R-3	To Node	J-8
Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss (ft/100 (ft) (ft) (ft) (ft)	Initial Status Open Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headlo (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss Headloss (ft/1000 (ft)) (ft) (ft) (ft)	Elevations			
Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss (ft/100 (ft) (ft) (ft) (ft)	Calculated Results Summary Time Control Discharge (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) (ft) Headloss Headloss (ft/1000 (ft)) (ft) (ft) (ft) (ft) (ft) (ft) (ft	From Elevation	187.00 ft	To Elevation	0.00 ft
Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss (ft/100 (ft) (ft) (ft) (ft)	Calculated Results Summary Time Control Discharge (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) (ft) Headloss Headloss (ft/1000 (ft)) (ft) (ft) (ft) (ft) (ft) (ft) (ft	Initial Status			
Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss (ft/100 (ft) (ft) (ft)	Calculated Results Summary Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headlo (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss Headloss Headloss (ft/1000 (ft) (ft) (ft)		Onen		
Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headl (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss (ft/100 (ft) (ft) (ft)	Time Control Discharge Velocity Upstream Structure Downstream Structure Calculated Calculated Pressure Headlo (hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss Headloss (ft/1000 (ft) (ft) (ft)	iniuai Status	Open	· · · · · · · · · · · · · · · · · · ·	
(hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradi (ft) (ft) Headloss Headloss (ft/100 (ft) (ft) (ft)	(hr) Status (gpm) (ft/s) Hydraulic Grade Hydraulic Grade Friction Minor Pipe Gradie (ft) (ft) Headloss Headloss (ft/1000 (ft) (ft) (ft) (ft)		Calculated F	Results Summary	
0.00 Open 158.795 0.65 187.00 186.86 0.14 0.00 0.14 C	0.00 Open 158.795 0.65 187.00 186.86 0.14 0.00 0.14 0.	3	(ft/s) Hydraulic Grade	Hydraulic Grade Fricti (ft) Headl	on Minor Pipe Gradier oss Headloss Headloss (ft/1000)
0.00 Open 100.700 0.00 107.00 100.00 0.14 0.00 0.14 (0.00 Open 158.795	0.65 187.00	186.86	0.14 0.00 0.14 0.3

_			
Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			
	<none></none>	Roughness	<none></none>
Pipe Characteristics			
Material	Cast iron	Hazen- Williams C	100.0
	Cast iron 10.0 in	Hazen- Williams C Minor Loss Coefficient	100.0 0.00
Diameter			
Material Diameter Check Valve? From Node	10.0 in	Minor Loss Coefficient	0.00
Diameter Check Valve?	10.0 in false	Minor Loss Coefficient Length	0.00 897.00 ft
Diameter Check Valve? From Node Elevations	10.0 in false	Minor Loss Coefficient Length	0.00 897.00 ft
Diameter Check Valve? From Node Elevations From Elevation	10.0 in false R-4	Minor Loss Coefficient Length To Node	0.00 897.00 ft J-9
Diameter Check Valve? From Node Elevations From Elevation	10.0 in false R-4 187.00 ft	Minor Loss Coefficient Length To Node	0.00 897.00 ft J-9
Diameter Check Valve? From Node Elevations From Elevation	10.0 in false R-4	Minor Loss Coefficient Length To Node	0.00 897.00 ft J-9
Diameter Check Valve? From Node Elevations From Elevation	10.0 in false R-4 187.00 ft Open	Minor Loss Coefficient Length To Node	0.00 897.00 ft J-9
Diameter Check Valve? From Node Elevations From Elevation Initial Status Initial Status Time Control Discharge Verience	10.0 in false R-4 187.00 ft Open Calculated I	Minor Loss Coefficient Length To Node To Elevation Results Summary ownstream Structure Calc Hydraulic Grade Frie (ft) Hea	0.00 897.00 ft J-9

Scenario Summary							
Scenario	В	ase					
Active Topology Alternative	В	ase-Active Topology					
Physical Alternative	В	ase-Physical					
Demand Alternative	B	ase-Demand					
Initial Settings Alternative	В	ase-Initial Settings					
Operational Alternative	В	ase-Operational					
Age Alternative	В	ase-Age Alternative					
Constituent Alternative	В	ase-Constituent					
Trace Alternative	В	ase-Trace Alternative					
Fire Flow Alternative	В	ase-Fire Flow					
Capital Cost Alternative	Ba	ase-Capital Cost					
Energy Cost Alternative	В	ase-Energy Cost					
User Data Alternative	Ва	ase-User Data					
Global Adjustments Summan	у						
	<1	None>	Roughness		<none></none>		
	_					· · · · · ·	
Pipe Characteristics					· · · · · · · · · · · · · · · · · · ·		
Material		Cast iron	Hazen- Williams C			100.0	
Diameter		10.0 in	Minor Loss Coeffici	ent		0.00	
Check Valve?		false	Length		8	72.00 ft	
From Node		R-5	To Node			J-10	
Elevations					<u> </u>		
From Elevation		187.00 ft	To Elevation			0.00 ft	
nitial Status							
Initial Status	0	pen					
·		Calculated	Results Summary				
Time Control Discharge (hr) Status (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Calculated Friction Headloss (ft)	Calculated Minor Headloss (ft)	Pipe	Gradien

Scenario Summary		-	
Scenario	Base		J
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary		·-	
	<none></none>	Roughness	<none></none>
Pipe Characteristics			
Material	Cast iron	Hazen- Williams C	100.0
Diameter	8.0 in	Minor Loss Coefficient	0.00
Check Valve?	false	Length	100.00 ft
From Node	R-7	To Node	J-6
Elevations			
From Elevation	187.00 ft	To Elevation	0.00 ft
Initial Status			
Initial Status	Open		
	Calculated F	Results Summary	
			d Calculated Pressure Handles
Time - Cambool Discharge 17		ownstream Structure Calculated Hydraulic Grade Friction	d Calculated Pressure Headlos Minor Pipe Gradien
Time Control Discharge V (hr) Status (gpm)	(ft/s) Hydraulic Grade (ft)	(ft) Headloss (ft)	

Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative	•	
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			
	<none></none>	Roughness	<none></none>
Geometric Summary			
X	4,149.66 ft	Elevation	187.00 ft
Υ	-8,717.82 ft	Zone	Zone

	Calculated Resu	lts Summ	ary
Time (hr)	Calculated Hydraulic Grade (ft)	Inflow (gpm)	Outflow (gpm)
0.00	187.00	-109.058	109.058

Scenario	Base		
Active Topology Alternative	Base-Active Topology	/	
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternativ	re	
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			
	<none></none>	Roughness	<none></none>
Geometric Summary			
X	-1,940.45 ft	Elevation	187.00 ft
Υ	-9,788.29 ft	Zone	Zone

	Calculated Results Summary				
Time (hr)	Calculated Hydraulic Grade (ft)	Inflow (gpm)	Outflow (gpm)		
0.00	187.00	-40.827	40.827		

Scenario Summary				
Scenario	Base			
Active Topology Alternative	Base-Active Topology			
Physical Alternative	Base-Physical			
Demand Alternative	Base-Demand			
Initial Settings Alternative	Base-Initial Settings			
Operational Alternative	Base-Operational			
Age Alternative	Base-Age Alternative			
Constituent Alternative	Base-Constituent			
Trace Alternative	Base-Trace Alternative	;		
Fire Flow Alternative	Base-Fire Flow			
Capital Cost Alternative	Base-Capital Cost			
Energy Cost Alternative	Base-Energy Cost			
User Data Alternative	Base-User Data			
Global Adjustments Summary		····		
	<none></none>	Roughness	<none></none>	
Geometric Summary				
X	-444.00 ft	Elevation	187.00 ft	
Υ	-11,385.00 ft	Zone	Zone	

Calculated Results Summary				
Time (hr)	Calculated Hydraulic Grade (ft)	Inflow (gpm)	Outflow (gpm)	
0.00	187.00	-158.795	158.795	

Scenario	Base		
Active Topology Alternative	Base-Active Topology	у	1
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternativ	/ e	
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			
	<none></none>	Roughness	<none></none>
Geometric Summary			
X	911.79 ft	Elevation	187.00 ft
Υ	-11,300.89 ft	Zone	Zone

	Calculated Results Summary				
_	Time (hr)	Calculated Hydraulic Grade (ft)	Inflow (gpm)	Outflow (gpm)	-
_	0.00	187.00	-107.515	107.515	

Scenario	Base		
Active Topology Alternative	Base-Active Topology	1	
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent	,	
Trace Alternative	Base-Trace Alternativ	re	
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			
Olobar Adjustinoms Gammary	<none></none>	Roughness	<none></none>
Geometric Summary			
X	2,896.28 ft	Elevation	187.00 ft
Υ	-11,185.56 ft	Zone	Zone

	Calculated Results Summary			
Time (hr)	Calculated Hydraulic Grade (ft)	Inflow (gpm)	Outflow (gpm)	
0.00	187.00	-66.898	66.898	

Scenario	Base		
Active Topology Alternative	Base-Active Topology		
Physical Alternative	Base-Physical		
Demand Alternative	Base-Demand		
Initial Settings Alternative	Base-Initial Settings		
Operational Alternative	Base-Operational		
Age Alternative	Base-Age Alternative		
Constituent Alternative	Base-Constituent		
Trace Alternative	Base-Trace Alternative		
Fire Flow Alternative	Base-Fire Flow		
Capital Cost Alternative	Base-Capital Cost		
Energy Cost Alternative	Base-Energy Cost		
User Data Alternative	Base-User Data		
Global Adjustments Summary			
	<none></none>	Roughness	<none></none>
Geometric Summary			
X	4,173.82 ft	Elevation	187.00 ft
Υ	-9,371.32 ft	Zone	Zone

	Calculated Results Summary				
Time (hr)	Calculated Hydraulic Grade (ft)	Inflow (gpm)	Outflow (gpm)		
0.00	187.00	-83.386	83.386		

Scenario Summary				
Scenario	Base			
Active Topology Alternative	Base-Active Topology			
Physical Alternative	Base-Physical			
Demand Alternative	Base-Demand			
Initial Settings Alternative	Base-Initial Settings			
Operational Alternative	Base-Operational			
Age Alternative	Base-Age Alternative			
Constituent Alternative	Base-Constituent			
Trace Alternative	Base-Trace Alternativ	<i>i</i> e		
Fire Flow Alternative	Base-Fire Flow			
Capital Cost Alternative	Base-Capital Cost			
Energy Cost Alternative	Base-Energy Cost			
User Data Alternative	Base-User Data			
Global Adjustments Summary				
	<none></none>	Roughness	<none></none>	
Geometric Summary				
X	-1,297.18 ft	Elevation	187.00 ft	
Υ	-8,576.33 ft	Zone	Zone	

C	Calculated Results Summary				
Time (hr)	Calculated Hydraulic Grade (ft)	Inflow (gpm)	Outflow (gpm)		
0.00	187.00	-74.744	74.744		